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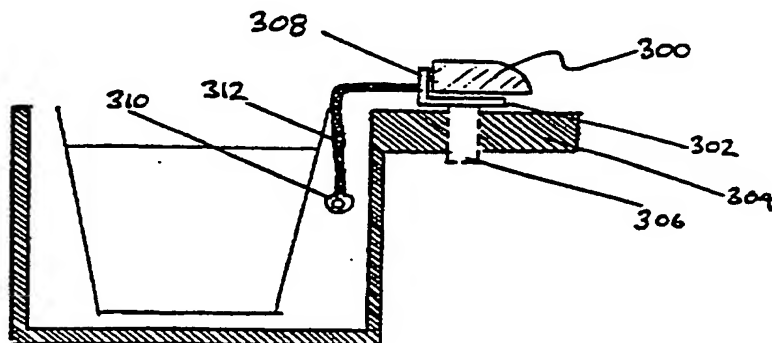
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Accession No. 85-317706/51 & DE3421322 A WPI
Abstract Accession No. 82-H9201E/27 & DE3045143 A

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(54) Abstract Title
Pan alarm

(57) An alarm 300, having a sensor 310 located on or near a pan by some attachment means 306, and arranged to alert a person visually or audibly when the temperature of a fluid in the pan reaches a threshold value. The alarm may be arranged to emit different signals to alert a person when the fluid contained in the pan reaches corresponding different temperatures. The alarm can be removably attached to the pan via base member 302 fixed to the pan handle 304, or can be attached directly to the side of the pan via clip jaws (figure 4). A further option is to include a temperature device capable of controlling the temperature of the pan.

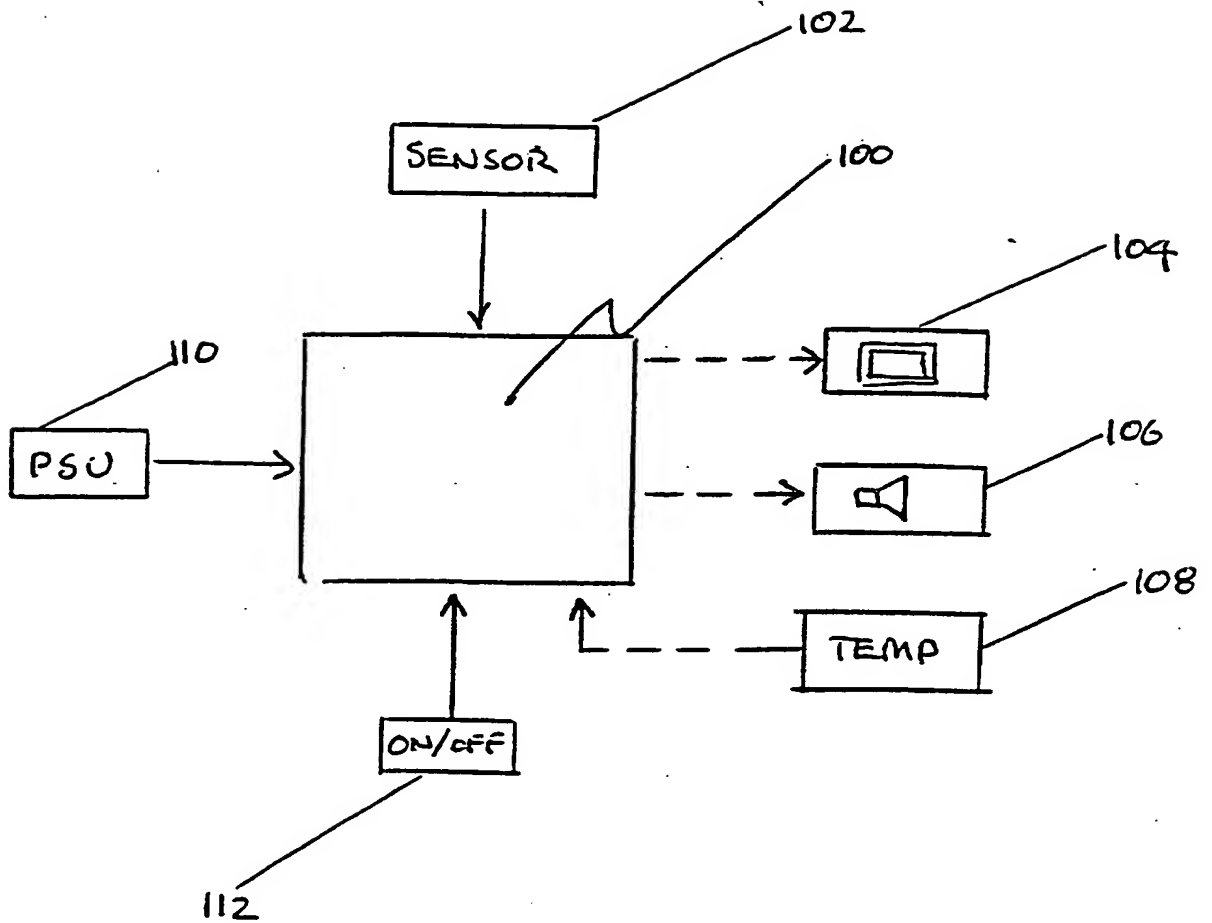
FIGURE 3



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FIGURE 1



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FIGURE 2

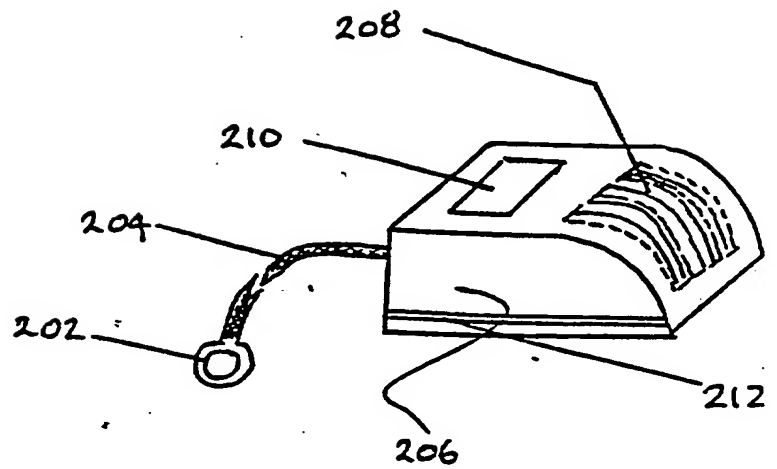


FIGURE 3

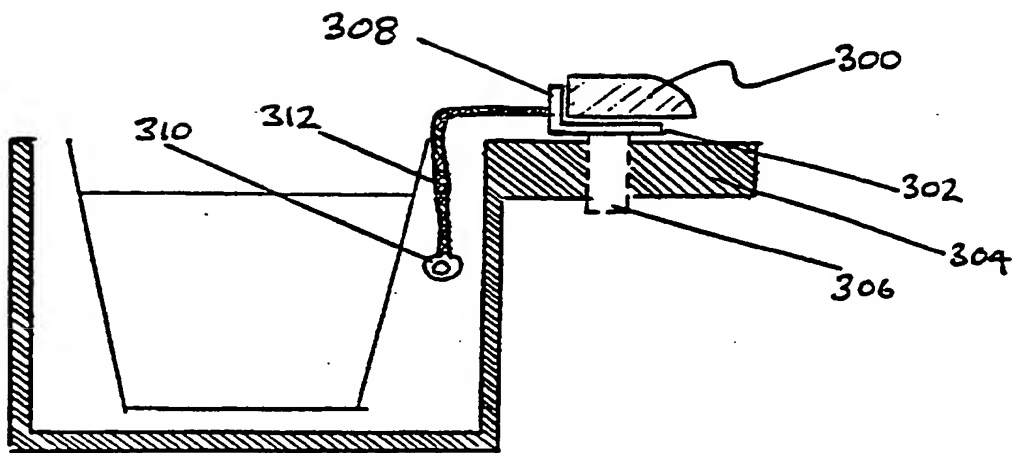
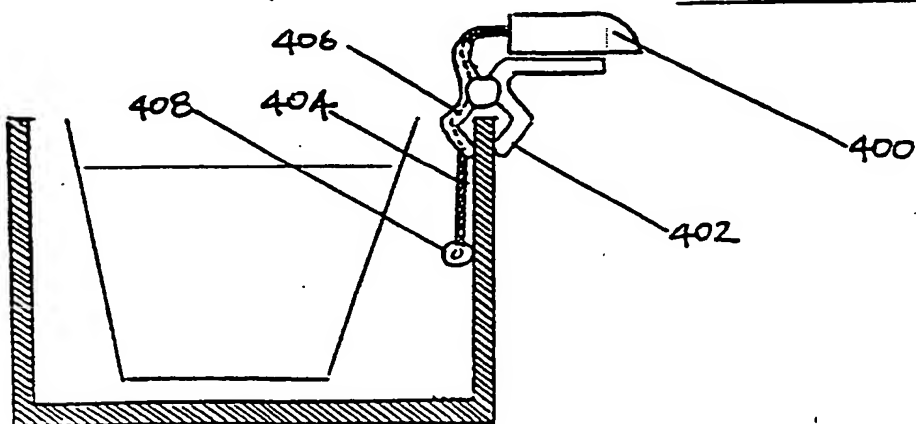


FIGURE 4



PAN ALARM

This invention relates to an alarm triggered by the temperature of fluid in a pan, for example an alarm triggered by the temperature of cooking oil or fat in a deep fryer. Temperature gauges are known for a wide variety of applications. In relation to cooking applications such devices are typically aimed at controlling cooking temperature, or simply indicating the temperature during the cooking process. For example, German Application 19602826 describes a pan lid with integrated temperature sensor and display with the sensors coupled to the interior of the pan such that a temperature display is visible on the lid top. German Application 3314537 describes an electric cooking process controller which detects the temperature of the cooking vessel and controls the vessel's heating elements. Other temperature sensing devices are described in Japanese Application 08191759, Japanese Patent No. 94057189, Australian Application 9186031 and German Application 304143. None of these devices provides an alarm to warn people should a fluid contained in a pan reach a critical temperature.

One of the biggest causes of house fires is fire started by overheating of fluids (usually fat or oil) in pans. The present invention has been devised to solve or mitigate this problem by providing an alarm having a sensor located on or near a pan and arranged to alert a person when the temperature of a fluid contained in a pan reaches a threshold value.

In one preferred embodiment the alarm is characterised in that it includes a sound emitting device to alert a person when the temperature of fat or oil in a pan reaches a threshold temperature. The sound emitted is loud enough to have the advantage of warning persons who might be in a different room. The alarm may also include a visual display to alert a person that the temperature of oil or fat is either not hot enough or too hot for cooking purposes. In one preferred embodiment the alarm is capable of emitting different warning signals to alert a person when the oil or fat reaches correspondingly different temperatures. This might provide the advantage of the alarm emitting a different signal should the oil

or fat be hot enough for cooking, another signal when it is too hot for cooking and/or a further signal when the fat or oil could ignite.

The preferred embodiment of the alarm includes a device to attach the alarm to the pan. The attachment device is characterised by having a base member
 5 capable of being fixed to the pan. The base member may be shaped to the pan or attached to the pan by some other means and in one preferred embodiment fixes the alarm housing by way of a groove such that the alarm housing can slide onto the base member. In another preferred embodiment the alarm includes a set of jaws capable of locating the alarm housing to the pan. In either case the alarm can be
 10 removed from the pan to facilitate cleaning or for use on another pan.

The alarm may also include a temperature device capable of controlling the temperature of the pan.

Some preferred embodiments are now described by way of example only, with reference to the accompanying drawings, in which:

15 Figure 1 is a schematic circuit diagram of the alarm.

Figure 2 provides an oblique view of the alarm which may be permanently fixed to a pan or attached as outlined in preferred embodiments 1 and 2;

Figure 3 provides a side view of preferred embodiment 1 fixed to a pan;

Figure 4 provides a side view of preferred embodiment 2 fixed to a pan

20 Figure 1 shows a schematic diagram of a typical circuit the alarm might have. In the preferred embodiment the alarm circuit comprises a controlling circuit 100, a temperature sensor 102, an LCD indicator 104, an emitting device 106, a temperature controller 108, a power supply 110 and an on/off switch 112. However, the LCD and temperature monitor are not essential for the invention.

25 Figure 2 shows the temperature sensor 202 located at the end of a cable 204. Alternatively sensor 202 could be attached to a heat sensitive cable at the top of that cable adjacent to the alarm housing 206. The sensor 102 is capable of detecting the temperature of surrounding fluid within the desired range (for fat or oil in a deep fryer this is approximately 100-360°C) and passing a signal dependent on that
 30 temperature to the controlling circuit 100. The LCD indicator 104 could be used

on the exterior of the alarm housing to display the temperature of the sensor and/or indicate whether the fluid in the pan is hot enough for cooking purposes, or indeed too hot to cook efficiently (for example, temperatures over about 190°C to 200°C are accepted as too high for frying food). The emitting device shown in Figure 1 as 106 could be a sound emitting device capable of being set to trigger emission at threshold levels, for example, when fat or oil is at the required temperature to cook and/or when it could ignite (ignition temperatures for fat or oil are about 310-360°C). The sound emissions are loud enough to alert persons at least in the same room as the alarm device. An adjustment means to fix the threshold levels required to trigger sound emission is located inside the alarm housing initially set and fixed by the manufacturer; encasing this prevents the emitting device operating at inappropriate temperatures. Alternatively the means for adjusting the threshold emission levels may be located on the outside of the alarm housing. The temperature monitor 102 may be linked to the pan heat source such that when certain temperatures are reached it reduces the supply of heat to the pan thereby reducing the risk of fire. A power supply 110 may be batteries or adapted for mains supply.

Figure 2 shows an oblique view of the alarm with alarm housing 206, temperature sensor 202 located at the end of cable 204. The housing has a vent 208 to facilitate release of the emitting device signal and a prominent on/off switch 210.

In the preferred embodiment the alarm housing 206 has a groove 212 into which may be slid the alarm housing to fix a base member located on a pan handle as shown in Figure 3.

Figure 3 shows one preferred embodiment in which the base of the alarm housing 300 is connected to a base member 302 fixed to a pan handle 304 by a strap 306 or some other means. The alarm housing is connected to the base member 302 by sliding the alarm housing onto the base member 302 using the groove shown in Figure 2 as 212 to located and fix the alarm housing to the base member 302. The alarm housing may be further held in place by a back plate 308 attached to the base member 302. The strap 306 can be removed from the pan

handle 304 allowing the whole device to be separated from the pan and cleaned. Alternatively, the alarm housing 300 can be removed, together with the temperature sensor 310, from the base member 302 to allow cleaning. In a further modification the cable 312 is sufficiently long to allow the temperature sensor 310
5 to lie on the base of a pan (i.e. in the event the pan is very shallow).

Figure 4 shows a second preferred embodiment with the alarm housing 400 fixed to a spring clip 402. The connecting cable 404 is advantageously located by one of the clip jaws 406 such that the temperature sensor 408 is positioned in the pan by positioning of the clip jaws and preferably does not move freely in the pan.
10 The alarm housing 400 may be permanently fixed to the clip 402 or located by a locating groove as in the first embodiment shown in Figures 1, 2, and 3 which allows the alarm housing and temperature sensor to be detached from the clip completely. Use of the clip 402 to fix the alarm housing and temperature sensor to the pan allows easy and rapid release.

15 Although the preferred embodiments have been specifically described the skilled man would appreciate that various modifications could be made within the scope of the invention.

While features and aspects believed to be of particular importance have been identified in the claims and specification the applicant claims protection for
20 any novel feature or combination of features described herein and/or illustrated in the drawings irrespective of whether emphasis has been placed thereon.

CLAIMS

1. An alarm having a sensor located on or near a pan and arranged to alert a person when the temperature of a fluid contained in the pan reaches a threshold value.
5
2. An alarm as claimed in claim 1 characterised in that it includes a sound emitting device to alert a person.
- 10 3. An alarm as claimed in claim 1 or 2 characterised in that it includes a visual display to alert a person.
4. An alarm as claimed in claim 1, 2 or 3, characterised in that it is arranged to emit different signals to alert a person when the fluid contained in a pan reaches
15 correspondingly different temperatures.
5. An alarm as claimed in claim 1, 2, 3 or 4, characterised in that it includes a device to attach the alarm to the pan.
- 20 6. An alarm as claimed in claim 5 characterised in that it includes a pair of jaws to locate the alarm to the pan.
7. An alarm as claimed in claim 5 or 6 comprising a base member and a fixing means to attach the alarm to the pan characterised in that the alarm is
25 attachable to the base member and the fixing means arranged to fix the base member to the pan.
8. An alarm as claimed in claim 7 characterised in that the fixing means has a strap capable of attaching the base member to the pan.

9. An alarm as claimed in any one of claims 1-8 characterised in that it includes a temperature device capable of controlling the temperature of the pan.

10. An alarm substantially as hereinbefore described with reference to any of
5 the accompanying drawings



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Claims searched: All

Examiner: James Porter
Date of search: 26 June 1997

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK CI (Ed.O): G1N (NAFB, NAGD2); G4N (NCTX)
Int CI (Ed.6): A47J 27/00, 27/212, 36/00, 37/12; G01K 1/12, 1/14, 3/00, 13/00
Other: Online database: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB2301469 A (EVANS) See whole document	1-6
X	WPI Abstract Accession No. 95-141022/19 & FR2710512 A1 (LEMETAYER) 7.04.97 See abstract	1, 2, 9 at least
X	WPI Abstract Accession No. 95-201605/199527 & DE4342489 C (KATZER) 8.6.95 See abstract	1, 9 at least
X	WPI Abstract Accession No. 85-317706/51 & DE3421322 A (GROPPLER) 12.12.85 See abstract	1, 2, 5 at least
X	WPI Abstract Accession No. 82-H9201E/27 & DE3045143 A (KAPPNER) 1.7.82 See abstract	1-3, 5 at least

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.
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